Testbank 3.1 User's Manual

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13. ABSTRACT (Maximum 200 words)
This user's manual describes the operation and maintenance of the Testbank 3.1 database application software. Testbank 3.1 provides for the automated development of high quality tests by retaining and providing for the efficient retrieval of previously used test questions with the results of their usage. In addition to providing a measure of the questions' quality, this data is useful in the assessment of student performance across offerings of the course. Testbank 3.1 is an application program written run under the Microsoft Access 97 database management system within the Office 97 environment. The actual software and an electronic copy of this user's manual are available from the USAFA Department of Mathematical Sciences home page at URL: http://www.usafa.af.mil/dfms/.

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This research report entitled "Testbank 3.1 User's Manual" is presented as a competent treatment of the subject, worthy of publication. The United States Air Force Academy vouches for the quality of the research, without necessarily endorsing the opinions and conclusions of the author. Therefore, the views expressed in this article are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the US Government.

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DONALD R. ERBSCHLOE, Lt Col, USAF
Director of Research

6 Feb 98
Date

UNITED STATES AIR FORCE ACADEMY

Department of Mathematical Sciences

TESTBANK 3.1
User's Manual

DEPARTMENT OF MATHEMATICAL SCIENCES

TESTBANK 3.1: User's Manual

Major Steven M. Hadfield

TABLE OF CONTENTS:

Introduction

What's this Testbank thing all about?

The purpose of Testbank 3.1 is to enhance the reliability and efficiency of test development through the automation of the process and the preservation of test item performance data. Testbank 3.1 accomplishes this by storing test items and the results of their usage in a database that is easily accessible via interactive menus and forms. Test developers utilize a query form that allows specification of a number of different criteria pertaining to test items. All test items that satisfy the specified criteria are presented to the user together with the results of each of each time they were used. Selected test items can be copied into Microsoft Word documents with just the press of a few buttons. Maintenance of test items is easily handled via a separate set of menus and forms. Also, there are special capabilities for handling final exams that utilize "baselined" test items--that is, test items that have been used on several previous final exams and facilitate cross-semester performance assessment. Within these capabilities, the user can easily obtain the summary of a previous final exam. The user can also update baselined test items with the results from usage in a final exam and compare the results of common items in different final exams which is useful for trend analysis and assessment of course content.

Intended Audience

This manual is intended for several audiences to include:

- Test Developers: Those wishing to find existing test items for inclusion in new tests. These individuals will be most interested in Chapters 3, 4, and 8 of this manual.

- Testbank Maintainers: Those assigned to add new test items into the database and update existing test items with results from a

usage. These individuals will be most interested in Chapters 3, 5, and 8 of this manual.

* Testbank Administrators: Those assigned to insure that the Testbank databases are properly maintained and utilized. These individuals will be interested in the entire document.

Hardware Requirements

Testbank is an Access 97 application intended to run within a Microsoft Office 97 environment. Testbank requires a Windows 95 capable personal computer, preferably with at least 16MB of main memory (RAM) and 20-50MB of available disk space for each version of Testbank. Disk space requirements depend on how many items are to be stored and how much graphics data are included in the items. A rule of thumb would be about 10MB for every 500 test items if minimal graphics are included within items. Substantial graphics within items could increase this requirement by as much as 50 times.

Overview

The organization of this manual follows the functions provided by Testbank for the most part with some supplemental information included where appropriate. First, the installation procedures are defined in Chapter 2. Then some general information about Testbank is provided in Chapter 3. This information pertains across functional lines and is often referred to within the rest of the document. The next three Chapters (4, 5, & 6) parallel the three primary functions of Testbank. First, the capability to find test items is described. Next the tools to maintain the Testbank are described to included adding new items and updating existing items with the results of a usage. Finally, the special capabilities for dealing with baselined final exam questions are detailed. The remainder of the manual describes some supplementary forms and capabilities that may be useful to future Testbank Administrators (Chapter 7) and also provides some checklists for common tasks regarding the up-keep of Testbank (Chapter 8).

Chapter

2
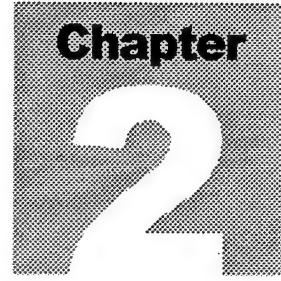
Installation Procedures

How do I get Testbank up and running?

Installation of Testbank 3.1 is quite simple; however, you must first have Microsoft's Office 97 (to include Access 97) installed on your computer. The file: "master31.mdb" has an empty master copy version of Testbank 3.1. Simply copy this file to your system changing the root part of the file name to reflect the name of your course but maintain the ".mdb" extension, (for example: "Math243.mdb"). Then follow the instructions in Chapter 5 and/or the checklists in Chapter 8 to add test items to your database. The default password for new instances of Testbank is "testbank". This can be changed via the instructions provided below and in Chapter 7 to a more secure password.

Step-by-step procedures for installing Testbank are:

1. Copy the "master31.mdb" file to a directory of your choice on your computer. USAF Academy users can find the master31.mdb file in the x:\df\dfms\testbank directory. Users outside of the USAF Academy can obtain this file (and electronic copies of this manual) from the USAFA Department of Mathematical Sciences Home Page on the World-Wide Web at URL: http://www.usafa.af.mil/dfms/ under "software".

2. Change the "master31" part of this file name to a name that reflects the course which this Testbank will support. You can do this easily using the Windows Explorer program.

3. Start up Access 97 and open your renamed *.mdb file with the Exclusive box checked.

4. Select the **Tools|Security|Unset Database Password** option from the Access main menu bar to remove the default "testbank" password.

5. Select the **Tools|Security|Set Database Password** option to set a new, more secure password for your Testbank.

6. Follow the instructions in Chapter 5—Maintaining Test Items to add test items to your new Testbank.

Chapter

3
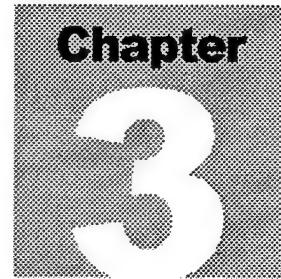
General Information

What common information do I need to know about Testbank?

Implementation

Testbank 3.1 is an application written in Microsoft's Access 97 database management system but highly integrated with Microsoft Word via the Office 97 environment. When running Testbank, you may notice that sometimes you are running under Access and sometimes under Word. Also, main menu bars for Access and Word will be available, but you do not need to use these. The Testbank menus and forms have provisions for all that you need.

Common Information

Within Testbank, test items are stored as Microsoft Word documents and have several pieces of reference information associated with them. Test items and their associated reference information are described below and used throughout the rest of this manual.

Test Items

Test items are the actual test questions stored as Microsoft Word documents. To move test items between Testbank and Word, they can be copied to and pasted from the system "clipboard" via buttons provided on the Testbank forms. In order to help insure the integrity of Testbank, you may want to type "TB nnn" in the top left corner of each item (where "nnn" is the Testbank Item Number). All Testbank forms that display items also display Item Numbers and thus you can easily verify that the correct item is displayed.

Item Numbers

Item Numbers (also denoted: "Item #") are the unique numbers that identify distinct test items and are used to correlate the item with its usage reference data. These numbers are automatically generated for new test items and cannot be assigned by the user.

Course

The Course field associated with test items identifies the course it is associated with and normally there is just one course supported by a Testbank database, but this field provides some flexibility to support multiple courses with one database.

Block

Block is a high-level keyword designating the major block of course material that the test item is associated with. Normally there are only 4-10 such blocks for a given course with the fewer the better. Care should be taken to not increase the number of different block keywords used within a Testbank database. Testbank provides mechanisms to easily select blocks from a list of blocks used within the database.

Topic

Topic is a lower-level keyword that distinguishes the specific topic being addressed by the test item. There are typically about 10 times more topics in a course than there are blocks. Care must still be taken to not use different spellings of a given topic within a Testbank database as this degrades its usefulness in finding test items. Testbank provides lists of all current topics whenever a topic field is included on a form.

Category

A test item's Category refers to the type of question it is. Typical values for this field include (but are not restricted to):

- MC - for multiple choice,

- TF - for true/false,

- SA - for short answer, and

- WO - for work-out.

Testbank, however, allows the user to use whatever two character values they wish. Furthermore, whatever values the user specifies for existing items in the database become the options that Testbank provides in pull-down lists for specifying the category for new items.

Level

The Level of a test item is an assessment of the level of learning being addressed by the test item. Like most other fields, Testbank does not restrict the two character values for this field, but typical values are those provided in E. G. Begle's Critical Variables in Mathematics Education, 1979, p 15.:

- CT - Computation: Items designed to require straight-forward manipulation of problem elements according to rules the subjects presumably have learned. Emphasis is upon performing operations and not upon deciding which operations are appropriate.

- CP - Comprehension (also denoted CH): Items designed to require either recall of concepts and generalizations or transformations of problem elements from one mode to another. Emphasis is upon demonstrating the ability to explain the concepts and their relationships and not upon using the concepts to produce a solution.

- AP - Application: Items designed to require (1) recall of relevant knowledge, (2) selection of appropriate operations, and (3) performance of the operations. Items are of a routine nature. They require the subject to use concepts in a specific context and in a way presumably already practiced.

- AN - Analysis: Items designed to require non-routine application of concepts.

- SN - Synthesis: Like Analysis but emphasizes the need to integrate several distinct concepts together in a non-routine application of the concepts.

Test

The Test field is associated with a particular usage of a test item and denotes the test it was used in. At the United States Air Force Academy, tests are called "graded reviews" and as such typical values are "GR1", "GR2", "GR3", … However, any three character code is allowed by Testbank. Care must be taken however in the codes used for tests versus final exam usages. The term "FIN" should be used to denote a final exam usage and the 1-3 character term(s) used for tests should start with a letter that comes after "F" in alphabetical order. This restriction allows Testbank to distinguish between test and final exam items when searching for test items.

Semester

Semester is a usage data field that denotes the semester that the item was used in. Typical values include "F" for Fall and "S" for Spring. ("Z" has sometimes been used to denote an experimental offering of a course).

Year

Year is the last two digits of the calendar year in which the item was used.

Ease

Ease indicates the percentage of those taking the test who correctly answered the item. For items that were graded with the potential for partial credit (as is typical of short answer and work-out test items), ease will denote average percentage of available points for the item that were received by those taking the test. In either case the values for ease will range between 0 and 100. **However, Testbank restricts the range to between 1 and 100 to preclude confusion caused by possibly representing an ease of say 65 (percent) as 0.65.**

Selectivity

Selectivity (also denoted "Sel") is a measure of how well the item discriminated between students who mastered the material and those who have not. This statistic is calculated by dividing the test population into three near equal groups. One group (called the "high group") is the third of the students who did the best on all the test items considered. The other key group (called the "low group") is the third who did the worst on the items considered. Care is taken to make the number in the high group the same as the number in the low group. (For example, if 10 students took the test, we would rank order them by overall scores and the top 3 would be the high group and the bottom 3 would be the low group).

The selectivity statistic is then computed by computing the individual test item's ease for just those in the high group and subtracting the test item's ease for just those in the low group.

$$SELECTIVITY = \frac{EASE_{HighGroup} - EASE_{LowGroup}}{100}$$

Thus, the selectivity statistic will range between -1 and 1. A selectivity of -1 means all those in the low group got the item correct and all those in the high group got it wrong (BAD NEWS!). Obviously, items with selectivity nearer to 1 are preferred.

Selectivity for items graded with partial credit can be computed using the same formula as above but with the ease computed as the average percentage of available points received by those in each group.

WARNING: The selectivity statistic for an item is sensitive to the quality and number of other items with which it was given, together with the number of students that took the test. Few accompanying questions, poor quality accompanying questions, mis-graded accompanying questions, and small test populations can severely degrade the value of this statistic.

Number

The Number (Num) field is the number under which the test item appeared within the test. This field is especially important for final exam items because exam summaries and comparisons are ordered by this value.

Option

There are five Option fields recorded with each usage of a test item; however, these fields only really pertain to multiple choice and true/false questions. The **Opt n** fields indicate how many of those taking the test chose option n. This data can be useful when evaluating a multiple choice test item and determining which alternatives were most effective as "distractors".

Population

Population is the number of students taking the test in which the test item was given.

Menu System

Figure 3.1 below shows the Testbank Main Menu. The **Find Items** button brings up a query form used by test developers to find test items. Chapter 4 discusses this process in detail. The **Maintain Items** button brings up a number of other functions used to maintain the Testbank database to include adding new test items and updating existing items with results from usages. Chapter 5 details these functions. The **Final Exams** button brings up specialized functions targeted at handling baselined final exam questions and comparing the students' performance on these items across semesters. These specialized final exam functions are detailed in Chapter 6.
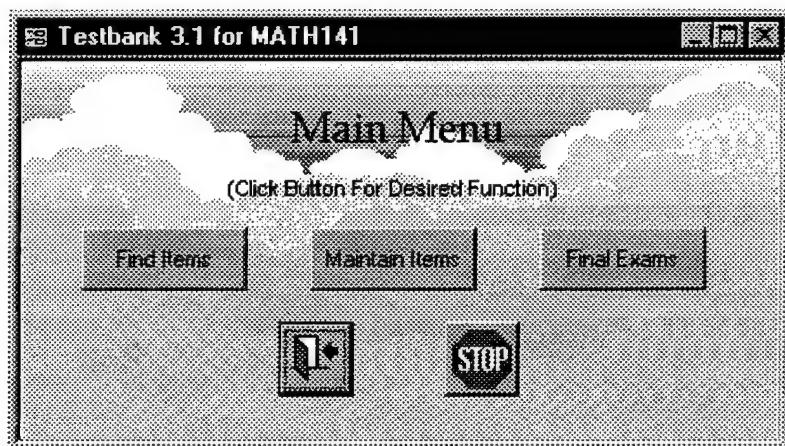

Figure 3.1 Testbank Main Menu

Close Form Button
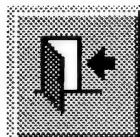
The **Close Form** button (shown as an open door icon) causes the user to exit the current form and return to whatever form was previously displayed. The Close Form button on the Main Menu exits the Testbank menu system but keeps Microsoft Access active.

Quit Testbank Button

The **Quit Testbank** button (shown as a stop sign) causes an immediate exit from Testbank and Microsoft Access.

Chapter

4
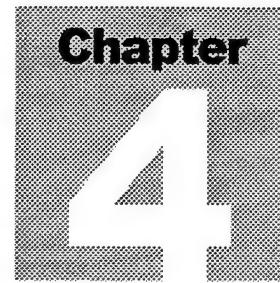
Finding Test Items

How do I find test items in Testbank?

Most users of Testbank will be interested in using it to find test items to include in tests being developed. To do this you must access the Testbank Find Items query form. This is done using the **Find Items** button on the Testbank Main Menu (Figure 3.1).

Query Form

Test items are found in Testbank by using any of a number of different types of criteria. The user specifies these criteria via the Testbank Find Items query form found in Figure 4.1 below.

Figure 4.1 Testbank Query Form

Specifying Selection Criteria

Selection criteria for queries of the Testbank are specified using the Find Items query form shown in Figure 4.1. Any combination of the available criteria may be specified and returned test items must satisfy all the specified search criteria. For most fields, there are pull-down lists available by clicking on the down arrow on the right side of the field. These pull-down menus are built dynamically and contain alternatives that are exactly the values for that field currently used by the test items in the Testbank (hence they are self-maintaining). Any particular search field on the Testbank Find Items query form can be left unspecified by either leaving it blank or by putting a "*" in that field. Wildcard searches are also possible using specific letters combined with "*" to specify any set of characters and/or "?" to specify any single character. For example, the search criteria "integ*" could be used to find any Topic beginning with "integ" such as integral, integrals, or integration.

NOTE: Descriptions of the fields that can be used as search criteria and their typical values can be found in the discussions of common information found in Chapter 3.

Ease and Selectivity Range Searches

The Ease range criteria allows the user to specify a range on the ease statistic. Since test items may have multiple usages each with distinct ease results, an average ease (simple average, not weighted) is computed for each item and only those items who's average falls in the specified range are accepted. Valid ranges must be within the interval 1-100 with the left bound lower than the right. (The astute reader will realize that Ease statistics can actually range between 0 and 100, but the 0 to 1 subrange was purposely disallowed to preclude confusion caused by mis-entering Ease values as decimals instead of percents, that is, as 0.75 instead of the correct 75.0).

Likewise selectivity ranges provide bounds on the simple average of a test item's selectivity results from one or more usages. Valid ranges are within -1 to 1.

Test vs Final Exam Items

Within Testbank test items used in final exams are treated differently than those used in regular tests. The reason for this is that we use baselined final exams where questions are repeatedly used across semesters and the results tracked to assess and compare student performance across course offerings. Hence, we want to be careful to not use final exam test questions in regular tests. This is the reason behind the box in the upper right of the Find Items query form where the user can select one of the three options (Just Tests, Just Finals, Tests and Finals).

The mechanism by which this feature is implemented is based on the Test field of the various usages of a test item. For this mechanism to work, usage of a test item on a

final exam should be recorded as "FIN" and usage on a regular test should be recorded with a 1-3 character code that comes after "FIN" in an alphabetical ordering. The codes "GRn" and "TST" work well and are commonly used.

Response Item Ordering

Testbank offers two options for the ordering of test items returned by a Find Items query. If the **Randomize** box is checked on the query form, the returned test items will be provided via a random ordering of their Item Numbers. Furthermore, the randomization process is different each time a query is submitted, so the ordering of returned items will be different. This shuffling of test items should help insure that all items are more equally likely to be selected.

If the Randomize box is unchecked, the returned items will be provided in ascending order of their Item Numbers.

By Item Number Selection

The **Find By Item #** button on the Find Items query form (Figure 4.1) allows the user to pull up a specific test item who's Item Number happens to be known. Clicking on this button brings up a dialog box that asks for the Item Number desired, and then locates and displays that item.

Displaying Query Results

When a Find Items query is submitted, Testbank locates all the test items that satisfy the specified criteria and then displays them one at a time for the user to view and consider. There are three parts to the presentation of these returned test items. The primary display shows the actual test item with key reference information (See Figure 4.2). This Test Item Display provides access to a secondary display, called **Ref Data**, which consists of the results of the item's usage(s), (see Figure 4.3). On the Test Item Display there is also a button used to get a print out of the item with all of its reference (usage) information.

Test Item Display

The Test Item Display of test items returned by a Find Items query is shown in Figure 4.2. Key information about the test item is presented on the top portion of the form. In the upper right corner there is also a compressed display of the entire test item. The middle portion of the form provides a full-scale display of the test item in a scrollable window so the entire item may be viewed. **WARNING: The scrolling function may be slow, especially when the test item contains embedded graphics.**

At the bottom of the Test Item Display is a series of buttons for key functions.

The **Print Test Item** button produces a printed report of the test item and its associated reference (usage) information.
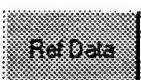
The **Ref Data** button brings up a secondary form containing the test item's reference information (further discussed in the next section).
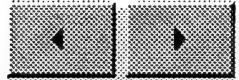
The **Previous Item and Next Item** buttons (with left and right arrows respectively) allow the user to move forward and backward through the returned test items.
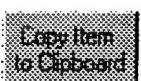
The **Copy Item to Clipboard** button selects the actual test item (as a Word document) and copies it to the Windows 95 Clipboard. From the clipboard, the test item can be easily pasted into new tests.

The **Close Form** button closes the Test Item Display form and returns the user to the Find Items query.

At the very bottom of the Test Item Display form's window are additional Access record navigation buttons that allow the user to move through the returned items. Access also shows what number response is currently displayed and how many responses there are in total.
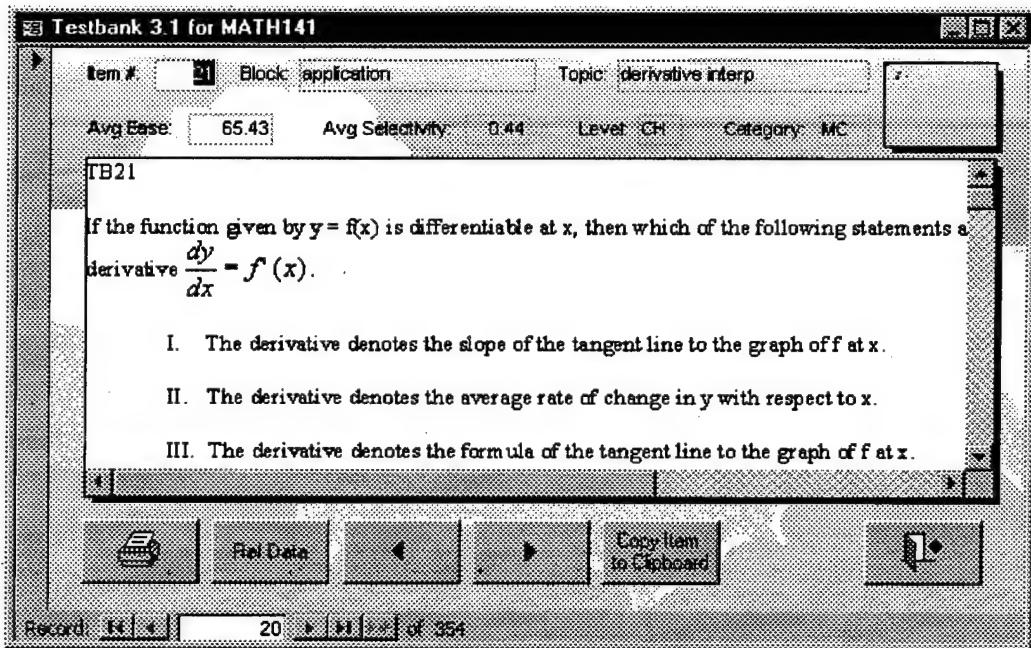
Figure 4.2 Test Item Display

Reference Data Display

Selecting the **Ref Data** button on the Test Item Display form brings up a secondary form that displays the test item's reference (usage) information. This Reference Data Display is shown in Figure 4.3. Much of the item's key information is repeated on this form, but the details of each time the item has been used are also shown in a scrollable region in the middle of the form. Buttons at the bottom of this form allow the test item (and its reference data) to be printed, the user to return to the Test Item Display form, and for the form to be closed. Closing this form returns you to the Find Items query form. The scrollable region in the middle of the Reference Data Display also has the Access record navigation buttons, and displays the number of the current usage record as well as how many usages there are in total. These allow the user to move through all the various usages of a test item.

Figure 4.3 Reference Data Display

Test Item Prints

Test Item prints are available on either the Test Item Display form or on the Reference Data Display via the button with the printer icon. This button produces a printed report that contains the displayed test item and all of its reference information including the data from each of its usages.
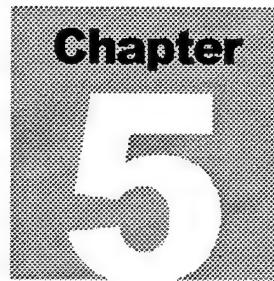
Maintaining Test Items

How do I add and update test items within Testbank?

Maintaining the Testbank primarily involves adding new test items and updating existing ones either by adding the results of the item being used in a test or final exam or revising the item to make it more effective. However, there are other functions that also come in handy. In particular, these include the ability to print out the test items with their reference data for either the entire Testbank or a selected subset of the Testbank as well as the ability to print out the Block and Topic values currently in use. There's also a special button for just loading in the Word documents for test items that already have the rest of their information specified. These functions are all available on the Maintain Test Items menu (shown in Figure 5.1) which is accessed from the **Maintain Items** button off of the Testbank Main Menu (Figure 3.1).


Testbank 3.1 for MATH141

Maintain Test Items

[Add New Item]	Print All Test Items
Modify/Update Items	Print Selected Items
Load Word Documents	Preview Blocks Report
	Preview Topics Report
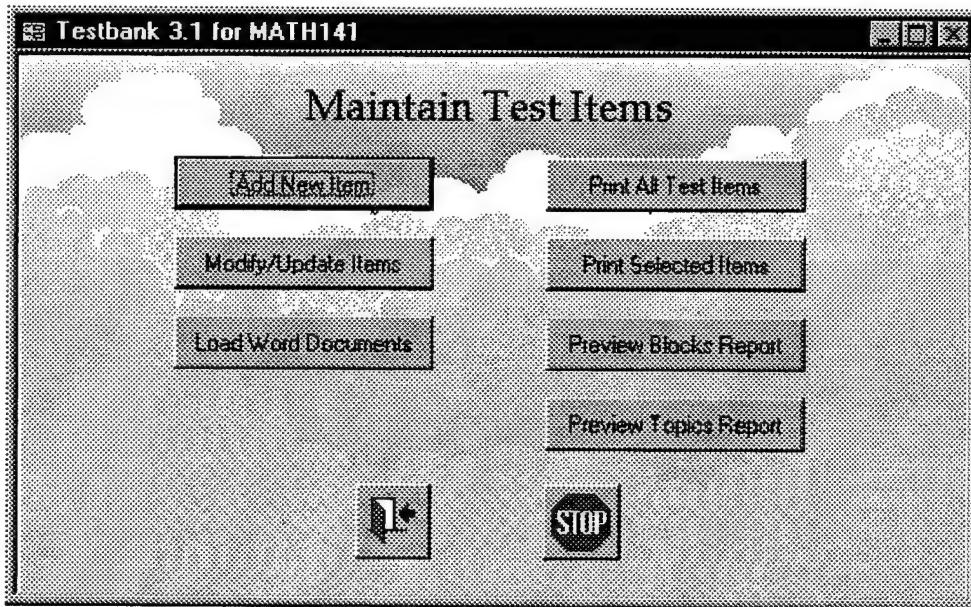
Figure 5.1 Maintain Test Items Menu

Add/Modify Test Item Form

Both the **Add New Item** and **Modify/Update Items** buttons from the Maintain Test Items menu lead to the same form which is used for both purposes. The difference is that when accessed via the **Add New Item** button, the Add/Modify Test Item form is brought up in add mode where all the fields are blanked out or set to default values. When accessed via the **Modify/Update Items** button, the same form displays the first test item in the Testbank. The Add/Modify Test Item form is shown in Figure 5.2 and both the add and modify functions are described in greater detail below.
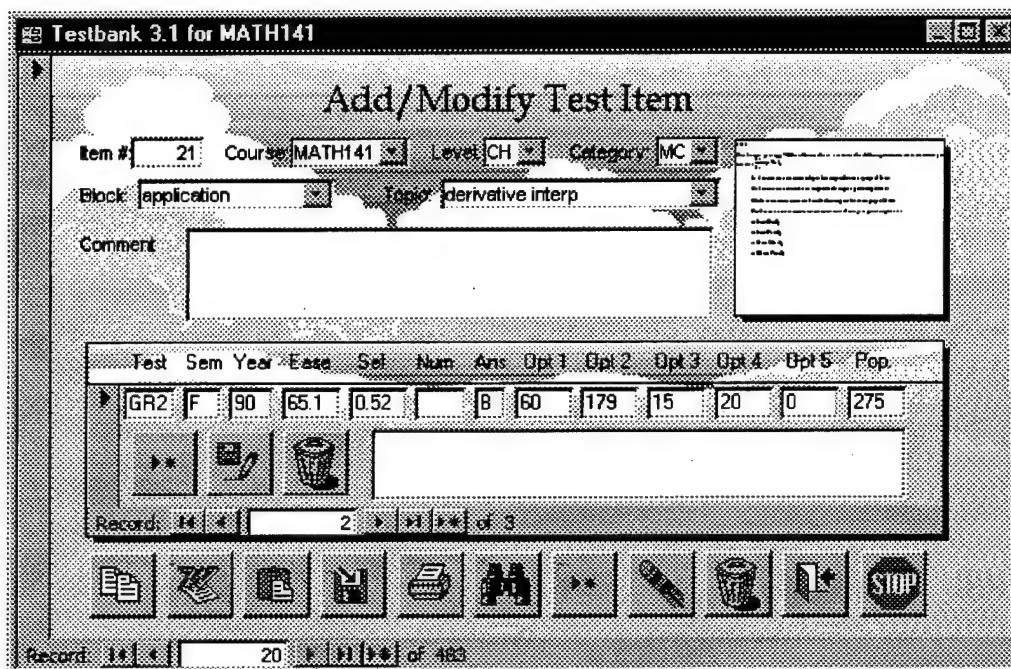

Figure 5.2 Add/Modify Test Item Form

The Add/Modify Test Item form has fields for each item associated with the test item as well as a condensed (usually too small to read) view of the actual item. Many of the fields have pull-down menus associated with them (via the box with the down-pointing-arrow) that provide a list of the currently in-use values for that field from which the user may choose a value to assign to the field. However, other values will also be accepted for each field. Minimal restrictions and checking are imposed on these fields to provide for the flexible use of Testbank, but some fields are forced to uppercase and others to lower case to implement the consistency needed to use these fields to look up items.

In the center of the Add/Modify Test Item form is a subform that displays the various usage results for the item. One usage is shown at a time. In the low part of the subform are record navigation buttons along with current and total record numbers. These navigation buttons can be used to move between usage records.
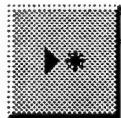
Add Test Item Usage Records

To add a new record of usage results to a test item, click the **Add New Usage** button within the usage subform (button with the right arrow followed by an asterisk). You will be provided a new blank usage record that can be filled in with the usage data. **NOTE: If you are adding multiple usage records, the Test, Semester, Year, and Population fields will default to the values entered on the last new record. This is done to reduce the effort necessary to add several new usages of different test items all used on the same test.**

Modify Test Item Usage Records

To modify a usage record, move to the usage record using the record navigation buttons on the bottom of the usage subform and update whatever fields are appropriate.
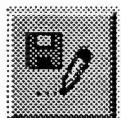
You can commit either a new or updated usage record to the database using either the **Save Usage** button (button with the diskette and a pencil on it) or by moving to a new usage record or test item.

To delete a usage record, use the navigation buttons on the usage subform to locate the usage record to be deleted and then press the **Delete Usage** button (one with the trash can on it). You will then be prompted to confirm the deletion.

Add/Modify Test Item Form Buttons

At the bottom of the Add/Modify Test Item form there are a number of buttons provided to assist with maintaining test items. The functions of these buttons are described below. You can also get some information on these buttons by placing your cursor on the button and leaving it set there for a few seconds. When you do this, a small message will appear near the button describing its function.

The **Copy Test Item** button copies the current test item (as a Microsoft Word document) to the Windows 95 Clipboard. From the clipboard, the test item can be included within tests or brought into Word to be revised.

The **Run Word** button calls up the Microsoft Word program so a copied test item can be pasted into a test. Typical uses of Word would be to include the test item into a test or final examination or to make necessary revisions to it.

NOTE: The test item will be copied into the clipboard as a self-contained Word document. Thus when it is pasted into another document, it will be a

document within a document. To edit a test item, you must first double click on it within Word. This will cause the actual test item document to be opened as a distinct document which can then be edited and saved.
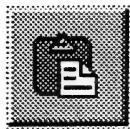
The **Paste Item** button pastes the contents of the Windows 95 system clipboard into the actual test item field. **HINT: Type the Testbank Item Number into the actual test item document. This way, when it is displayed on a form, you can verify that the correct item was stored in the correct test item record.**
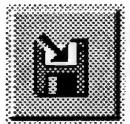
The **Save Item** button saves the current test item and its associated usage records to the permanent database file. This saving process can also be accomplished by moving to another item or closing the Add/Modify Test Item form.

The **Print Item** button causes the test item and its associated usage records to be printed as a report on the default printer.
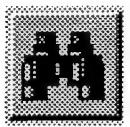
The **Find Item** button will do a look-up of the next test item that has a specified value in one of the various fields. **Prior to hitting this button you want to make sure that you have selected the field you want to search. This will most likely be the Item Number field.** Upon hitting the button, you will be prompted to enter the value for the selected field that you want to search for. The title of the window that asks for this value will show what field you are searching in to help you verify that you are doing what you wanted to do. You can then use the **Find First** or **Find Next** buttons to locate the desired test item. The **Close** button will clear the window that prompted you for a search value.
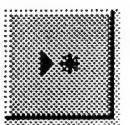
The **Add New Test Item** button will bring up a new blank test item. You will not be able to specify the Item Number as it will be automatically assigned the next value in sequence when the other fields are specified for the test item.

The **Undo Test Item Changes** button is only available when a test item has been modified but before the changes have been committed or saved. It will undo the changes and restore the original field values.

The **Delete Test Item** button causes the current test item and all of its associated usage records to be deleted. When this action is performed, you will be prompted to verify that you want the make the deletion. Once the deletion is made, you will not be able to recover the item.
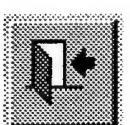
The **Close Form** button causes the Add/Modify Test Item form to close and the Maintain Test Items menu to be made active.

The **Quit Testbank** button causes the Add/Modify Test Item form to close and the Testbank and Access programs to be closed.

Modifying the Test Item Document

To modify a test item document, such as to change the wording or the order of multiple choice options, you must do the following sequence of steps:

- First locate the test item using either the record navigation buttons at the bottom of the Add/Modify Test Item form (Figure 5.2) or by using the **Find Item** button.

- Then use the **Copy Test Item** button to copy the test item document to the Windows 95 clipboard.

- Run Microsoft Word using either the **Run Word** button or via any other available Windows 95 method.

- Paste the test item document from the clipboard into a Word document.

- Edit the test item document using the facilities provided by Word. Since the test item is a Word document itself, you will have to double-click inside the document to call it up in its own window.

- Copy the edited test item back to the clipboard.

- Transition back to Access by either closing Word, minimizing it, or making Access active.

- Click on the **Paste Test Item** button to paste the edited test item from the clipboard to the test item field.

- Commit the update to the test item by either clicking the **Save Item** button, moving to a new test item (via the **Find Item** button or by the record navigation arrows), or by closing the Add/Modify Test Item form.

Adding a New Test Item

To add a new test item to the Testbank database, you'll want to hit the **Add New Test Items** button from the Maintain Items menu or use the **Add New Test Item** button in the Add/Modify Test Item Form. This will cause the Add/Modify Test Item form to display empty and defaulted field values. Then follow the steps below to enter the new test item.

- Skip the Item Number field. It will be assigned automatically by the system.

- Specify Course, Level, Category, Block, Topic, and any Comment that you feel is appropriate in the corresponding fields. **NOTE: All of these fields, except the Comment, have pull-down lists of alternative values for this field. It is best to choose values from the pull-down lists. This keeps the available values very consistent which is beneficial when using these field values to look up test items. All fields are automatically converted to upper case except for Block and Topic which are made lower case and Comment which is not converted at all.**

- If the new test item has already been used, fill in the information for its usage in the usage subform.

- Insert the actual test item by typing it into Word and then selecting it and copying it to the Windows 95 clipboard. You may also just select it out of the test document in which it was used and copy it to the clipboard. **NOTE: It is a good idea to include the Testbank Item Number of the new test item in the upper right hand corner of the test item (as "TB nnn" where "nnn" is the Item Number) so that users can verify that the correct test item document is stored in the right test item record.**

- Transition back to Access and click the **Paste Item** button to paste the new test item into the database.

- Commit the update to the test item by either clicking the **Save Item** button, moving to a new test item, or closing the **Add/Modify Test Item** form.

Committing New and Updated Test Items

New test items and modifications to existing test items can be committed (saved) to the database by either:

- Clicking on the **Save Item** button,

- Moving to another test item using the record navigation buttons at the bottom of the screen,

- Moving to add a new test item with the **Add New Test Item** button,

- Or by closing the Add/Modify Test Item form via either the **Close Form** Button or the **Quit Testbank** button.

Default Data for Multiple New Test Items

When adding multiple new test items or multiple new usage records, Testbank will automatically provide default values for some typically recurring fields. Specifically the

- Course,

- Test,

- Semester,

- Year,

- and Populatiom

fields are defaulted to the values that were used in the last test item added. This feature is intended to make it easier to add new test items and to update those test items used in a given test.

Loading Word Test Item Documents

When adding new test items to Testbank, you may want to create any new test items and enter the reference data at one time and then later insert the actual Word documents for the test items. If you choose to do this, the **Load Word Documents** button on the Maintain Test Items form provides an easy mechanism for later inserting the actual Word documents. The Load Word Document form used for this purpose is shown in Figure 5.3. This form was purposely made small so you can shrink the sizes of both the Access and Word windows and have them both displayed on the same screen.
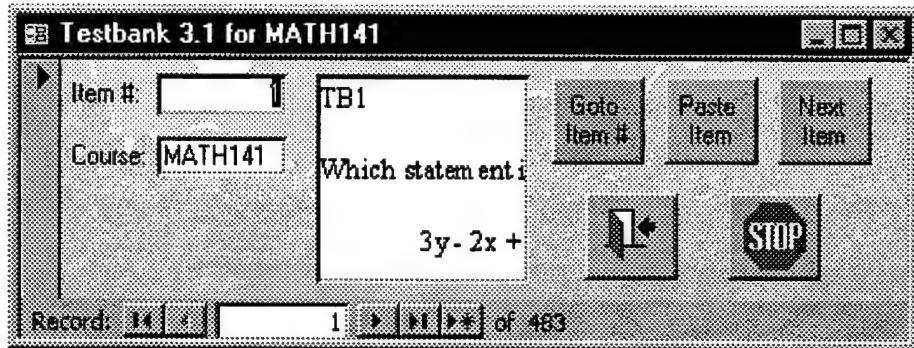
Figure 5.3 Load Word Document Form

The only fields shown on this form are the Item Number, Course, and the actual Test Item Word document. The **Goto Item #** button does a Find command to look up a

particular item by item number. The **Paste Item** button pastes the contents of the Clipboard into the Word test item field. The **Next Item** button advances to the next test item record. A typical sequence of events to use this form for transferring in actual test items would be:

1) Click on the **Load Word Documents** button, reduce the Access window and start up Word so that both Access and Word are visible on the screen.

2) Open the Word document containing the test from within Word.

3) For each item to be loaded into Testbank:

   a) Remove the point value and numbering prefix information on the test item and type in: "TB nnn" where "nnn" is the Item Number.

   b) Starting at the "TB nnn", select the test item and copy it to the clipboard via a CTRL/C or the button.

   c) Insure the correct test item record is displayed and that you're in the proper course's Testbank via the Course field.

   d) Click on the **Paste Item** button and wait to see that the item has been copied into the Test Item field.

   e) Move to the next test item using the **Goto Item #** or **Next Item** buttons, as appropriate. Either of these actions will insure the previously updated test item is saved in the database.

4) When done with a particular test, close it without saving any changes (i.e. don't save the "TB nnn" annotations in the actual test). Open a new test document, if appropriate and repeat Step 3.

5) When finished, simply exit the form using the or buttons.

Remember to make a backup copy or two of the database file after each significant update so that your work will be protected from loss.

Deleting Test Items

Test items may be deleted from the Testbank by first selecting the **Modify/Update Test Items** button in the Maintain Test Items menu. This brings up the Add/Modify Test Item form. The appropriate test item can be located using either the **Find Item** button to search on a selected field or via the record navigation buttons at the bottom

of the form. Once the appropriate test item is displayed, click on the **Delete Item** button to delete it from the Testbank. Having done so, Testbank will prompt you for confirmation of the delete operation.

Testbank Backups

After doing any updates or additions to the Testbank database, it is a wise to make a copy of the database file, preferably on a different drive. By doing this you have a current backup of your Testbank and may preclude the loss of data if your primary database file or drive encounters errors.

Printing Multiple Test Items

There are a number of report printing options available on the Maintain Test Items menu. The first three allow the user to print all or some of the test items together with the results of their various usages. The second two provide printed reports of the Blocks and Topics, respectively, that are currently used in the Testbank.

Printing All Items

The **Print All Items** button on the Maintain Test Items menu produces a report of all test items in the Testbank. Each test item is a separate page and includes all of the results from its various usages. The report is brought up in Preview Mode since this report can typically be very large and the user may not want the entire report printed.

Printing Selected Test Items

The **Print Selected Items** button on the Maintain Test Items menu results in the query form shown in Figure 5.4 which is very similar to the Find Items query form shown in Figure 4.1. You may specify whatever combination of the available criteria that you wish and then submit the form via the **Print Items** button. The resulting report is brought up in Preview Mode so the user can verify the selected test items prior to having everything printed.
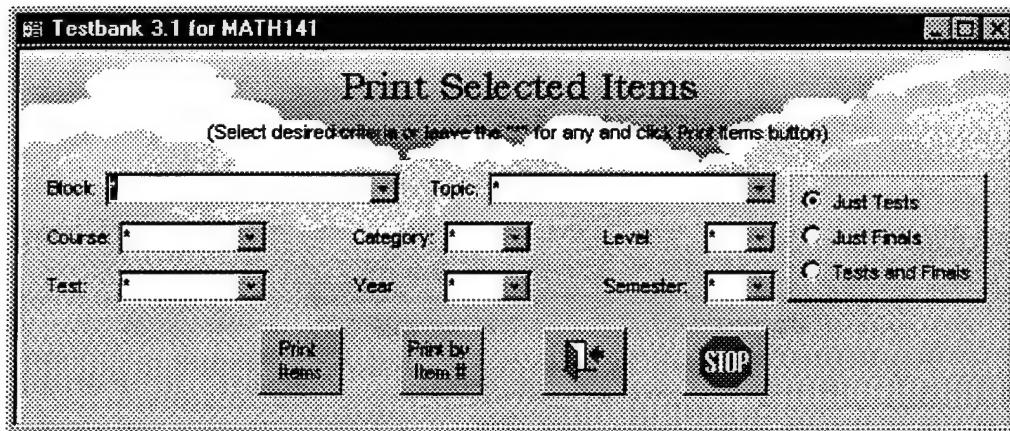
Figure 5.4 Print Selected Items Query Form

Printing Individual Test Items

The Print Selected Items query form has an extra button on it called **Print By Item #**. Clicking this button causes you to be prompted for a Testbank Item Number. Testbank will then print the selected item and its associated usage data directly on the default printer.

Block and Topic Prints

The bottom two buttons on the Maintain Test Items menu produce reports listing the Blocks and Topics currently in use by the Testbank. These reports are shown in Preview Mode in case the user just wants to view the information and does not require a hardcopy print out.
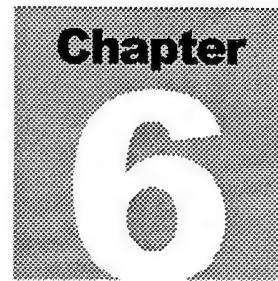
Handling Final Exam Items

Why might I deal with final exam items differently? How do I do this?

In the Department of Mathematical Sciences, we use "baselined final exams" to help insure equity in grading across semesters and to assess course performance trends. "Baselined final exams" are tests that include items that were used in previous offerings of the course. The results from the previous offerings can be compared to current results for purposes of cross-offering comparisons.

To facilitate the efficient handling of baselined final exams, Testbank has a separate set of functions available under the **Final Exams** button on the Testbank Main Menu (see Figure 3.1). The first of these functions produces a summary report of the Testbank items used in a previous final exam. This provides a useful starting point for developing new final exams. The second function provides a streamlined method for recording the results from using the baselined Testbank items in a final exam. Finally, the third function compares the results of common Testbank items used on two different final exams. These three functions are available via the Baselined Final Exam questions menu shown in Figure 6.1. Each of these three functions are described in more detail later.
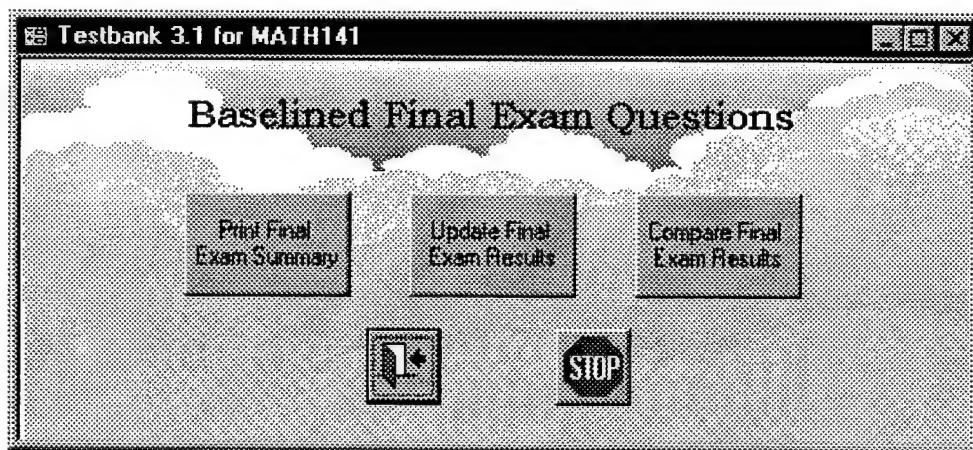
Figure 6.1 Testbank Baselined Final Exam Questions Menu

Final Exam Summary Reports

The **Print Final Exam Summary** button on the Testbank Final Exams menu is used to print a summary report of the Testbank items in a particular final exam. This report is a useful starting point for the development of subsequent baselined final exams. With each item in the final exam, the report includes its number in the exam, the Testbank Item Number, the Ease, the Selectivity, the Answer (for multiple choice and true/false questions), the Block, and the Topic. This information is helpful in determining which items to replace and to insure comprehensive coverage of course material.

When the **Print Final Exam Summary** button is clicked, a secondary menu (shown in Figure 6.2) is provided for the user to specify the Semester and Year of the final exam to be summarized. Notice that pull-down lists of options for both Semester and Year are provided. These contain only the Semesters and Years for which there are data in the Testbank. The summary report is then shown in preview mode from which it can be examined on screen or sent to the printer.
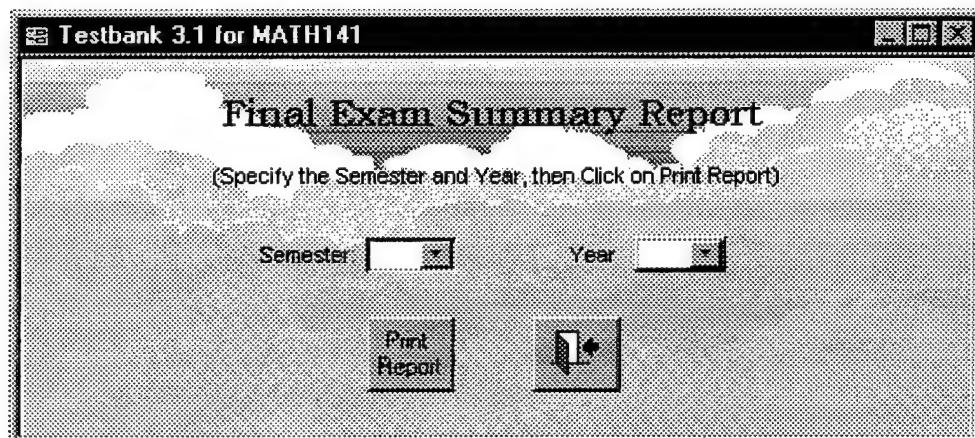

Figure 6.2 Final Exam Summary Report Menu

Updating Final Exam Results

The **Update Final Exam Results** button on the Baselined Final Exam Questions menu provides access to a specialized mechanism for entering results from the use of existing Testbank items in a new final exam. To use this function, the user needs to know the Testbank Item Numbers for each existing test item. The summary report described in the previous section is a good tool for providing these numbers if the test developer uses it to record which test items were carried forward to the new final exam.

When the **Update Final Exam Results** button is depressed, a secondary menu is presented. This menu is called the Update Final Exam Results menu and is shown in Figure 6.3. It prompts the user for the final exam's Semester, Year, and Population (# of students taking the exam). Pull-down lists are available for both Semester and Year. After entering all three pieces of data, the user should click on the **Update Results** button which causes the **Enter Final Exam Results for Existing Items** menu to be displayed.
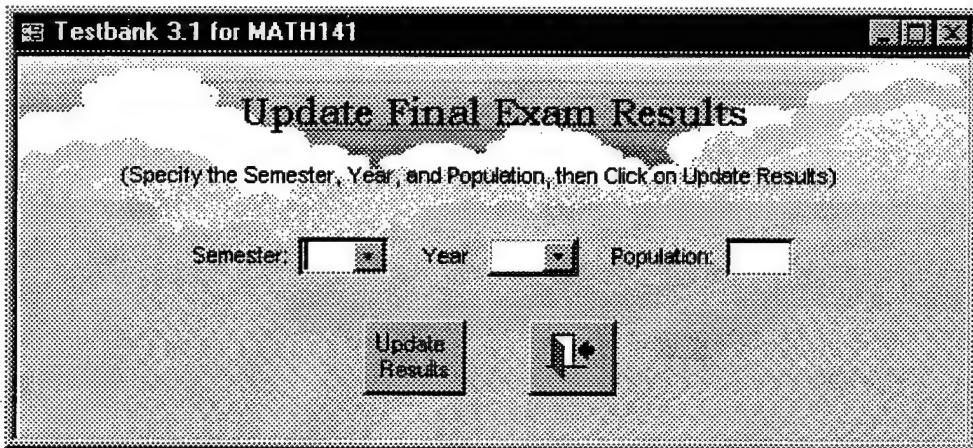
Figure 6.3 Update Final Exam Results Menu

The **Enter Final Exam Results for Existing Items** form is where the results for each test item used in the final exam are entered into Testbank. This form is shown in Figure 6.4. Notice that the Semester, Year, and Population fields are defaulted to the information entered on the Update Final Exam Results menu. The tab ordering also jumps over these fields so it is easier to input the data. To use the **Enter Final Exam Results for Existing Items** form:

- Enter the Testbank Item Number, Number of the item in the exam, Ease, Selectivity, Answer (for multiple choice and true/false), number responding to each option (for multiple choice and true/false), and possibly a comment on the usage (such as your opinion of how well the question did).

- To commit the new data, either hit the **Add New Usage** button , if there is another item to enter results for, or close the form via the button.
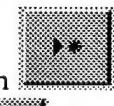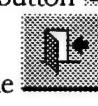
- If there are errors in the results, you can move your cursor to the appropriate field and enter the correct values or you can delete the entire usage record via the

  button.

- When all finished, simply use the button to exit.
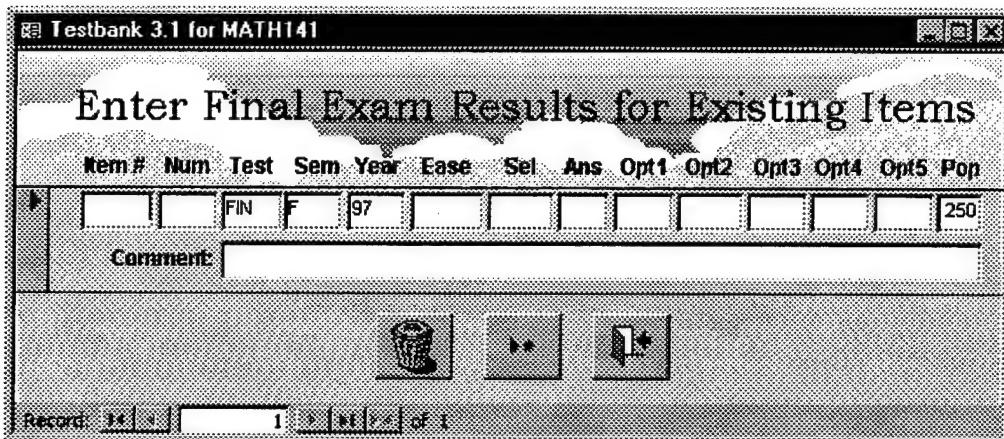
Figure 6.4 Enter Final Exam Results for Existing Items Form

Comparing Final Exam Results

Once the results from a final exam offering have been entered, as described in the previous section, they can be compared to the results of other final exam offerings that had test items in common. This is done by clicking on the **Compare Final Exam Results** button on the Final Exams menu (Figure 6.1). When this is done, the Compare Final Exams menu is displayed (see Figure 6.5).

The user then specifies the semester and year for each of the two final exams and clicks on the **Do Compare** button. The Semester and Year fields for both tests have pull-down lists of options for your use. The report produced contains information for each test item used in both the specified final exams. The Ease and Selectivity for both usages of each item are reported together with the Block and Topic of the item. The test items are grouped first by the Category of the questions (multiple choice, short answer, true/false, work-out) and then by the Number under which the item appeared in the first final exam. Average Ease and average Selectivity over these common test items are also computed and reported both by Category of the items and for all the common items together. The report is shown in Preview Mode where it can be either reviewed on the screen or printed.
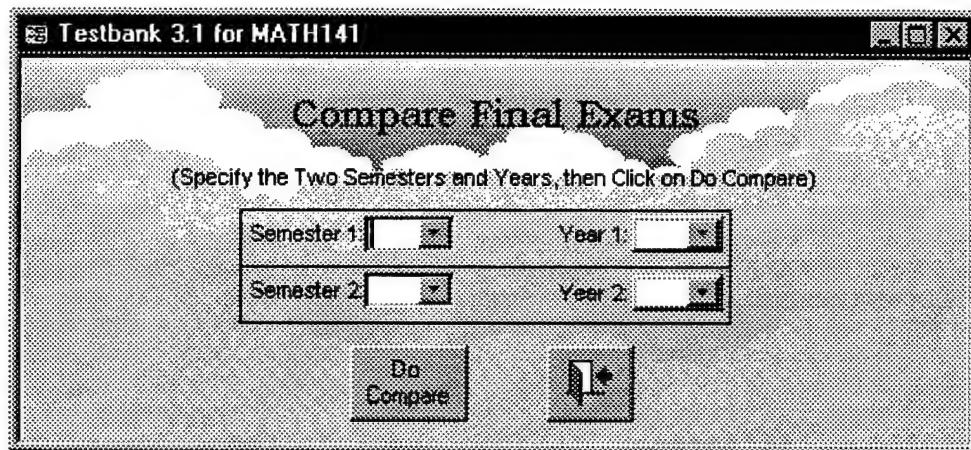
Figure 6.5 Compare Final Exams Menu

Dealing With Baselined Final Exams

The typical way to deal with baselined final exams using the mechanisms provided by Testbank would be:

- Produce a summary report of the previous course offering's final exam.

- Use the summary report from the last offering to develop the current offering's final exam. **Pay close attention to keeping track of the Testbank Item Numbers for all existing items used in the current final exam. A good way to do this is to INSERT|COMMENT with every test item using Word with the Testbank Item Number in the comment (as "TB nnn" where "nnn" is the Item Number).**

- After the current offering's final exam is given and graded, update the existing test items used with their results from this offering. **This is where keeping track of their Testbank Item Numbers comes in handy.**

- Compare the results of the current final exam with results from previous offerings. Often it is helpful to compare with several previous offerings, especially those given during the same semester (fall or spring).

Chapter

7
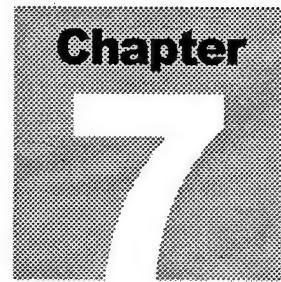
Administrative Tasks

What are the extra functions I'll need as Testbank Administrator?

As Testbank Administrator, you have several key responsibilities. The most important of these will be to insure that the Testbanks for our core courses are maintained and updated with the results of tests and final exams. A very reasonable goal would be to have the Testbanks updated with these results no later than one month after the end of the semester. It is also advisable to collect the actual test results within a week or so after the test. Checklist 2 in Chapter 8 specifies how such submissions should be prepared.

Other responsibilities of the Testbank Administrator include such tasks as periodically changing passwords, checking test items and their reference data for consistency, and compacting the Testbank databases to efficiently use available disk space. All of these tasks are detailed below.

Changing Database Passwords

Testbank uses the standard Access database security mechanism which involves a single password for the entire database. This security mechanism automatically enforces encryption of the Testbank. To change a password:

- Start up Access and select **FILE|OPEN DATABASE**.

- In the browse window that opens, find the database file (*.mdb), select the **Exclusive** check box, and open the database file.

- Select **TOOLS|SECURITY|UNSET DATABASE PASSWORD**. You will be prompted for and need to specify the old password.

- Select **TOOLS|SECURITY|SET DATABASE PASSWORD**. You will be asked to enter the new password twice for confirmation.

- Select **FILE|CLOSE** to close the database. The new password will now be in effect.

Checking Test Items

A key duty of the Testbank Administrator is to insure the integrity of the various course Testbanks. In particular, you'll want to look for consistent use of values for key reference data fields associated with test items and their usages. Much of this can be done via the Find Items query form described in Chapter 4. Most all of the fields on this form have associated pull-down lists that are dynamically built with the actual values used for the field by all the records currently in the Testbank. If there are redundant or confusing entries in any of these lists, you can do a search on the redundant/confusing values to see which test items come up and need to be modified.

Another good idea would be to do a Find Items query leaving all the search criteria set to the "*" wildcard values (and specifying "Tests and Final Exams"). All the test items will be returned by such a query and you can move through them to check them.

To fix test items, you can use the **Maintain/Update Items** button on the Maintain Test Items menu described in Chapter 5. If there are a lot of test items or usages to correct, you can do an "update query" from within Access. To do this, perform the following steps:

- Close the Testbank menus and expand the Testbank database window.

- Move to the Query tab and click on the **New** button (as shown in Figure 7.1).

math141 : Database				
Tables	Queries	Forms	Reports	Macros	Modules

Name	Description	Modified	Create ▲	Open
FindPrintItemsQu...		5/6/97 3:34:11 PM	5/2/9	
FindSpecificItem...		5/6/97 3:35:35 PM	5/2/9	Design
ItemNum Old		5/27/97 3:50:44 PM	4/17/	New
ValidBlocks		4/18/97 10:19:42 AM	4/18/	
ValidCategories		5/2/97 10:49:00 AM	5/2/9	
ValidCourses		5/2/97 10:48:26 AM	5/2/9 ▼	
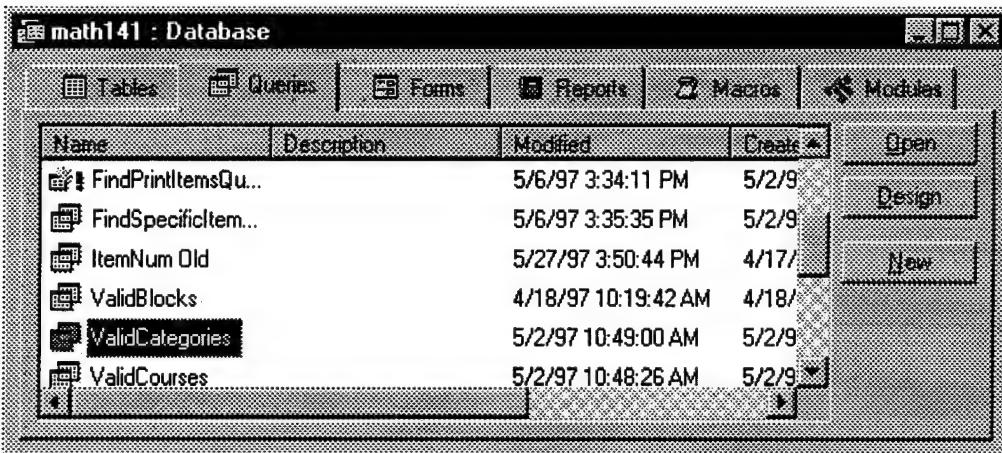
Figure 7.1 Testbank Database Window with Query Tab

- Choose the Design View for the new query.

- You will then be prompted for a table. Choose ITEM if the field you want to update is Course, Block, Topic, Category, or Level. Choose USAGE if the field you want to update is Test, Sem, or Year. Any other field modifications should be done individually via the mechanisms provided in the Maintain Test Items menu

from Chapter 5. **CAUTION: Be sure to only specify a single table when doing update queries; that is, ITEM or USAGE, but not both.**

- Change the query presented to an update query by selecting **QUERY|UPDATE** from the Access menu bar.

- Select the field to update from the pull-down list provided for fields.

- Specify the new value for the field in the "Update to:" block. Enter the value that you want to replace in the "Criteria:" block. Both of these must have quotes around them. An example is shown in Figure 7.2 where the Block field for test items (ITEM) is having all records with the value "old block value" changed to the value "new block value".
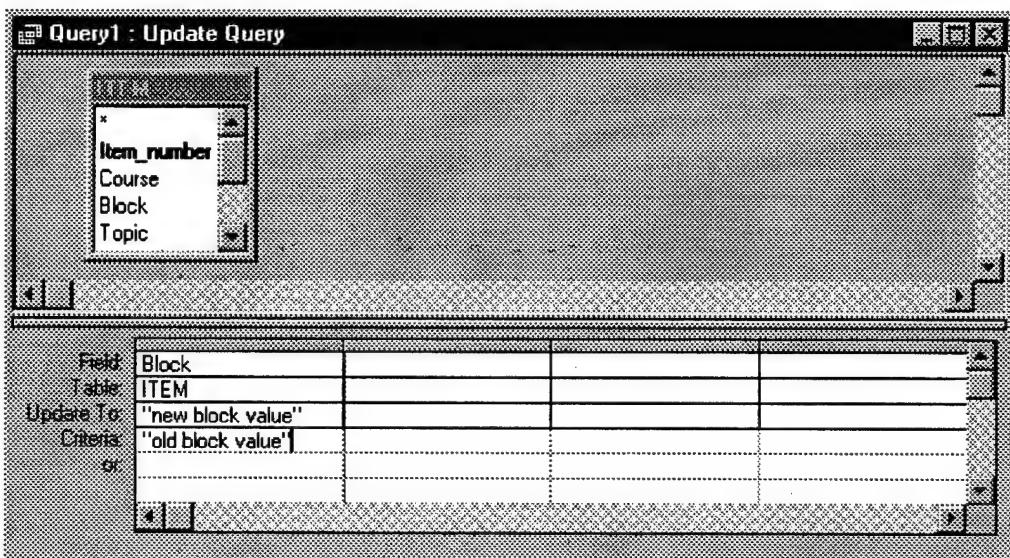
Figure 7.2 Update Query Example

- Run the query by clicking on the ⦿ button. You will then be asked to confirm the updates.

- Close the query form using the **X** button in the upper right corner of its window.

Another check-test-items procedure would be to look for and eliminate duplicate test items (identical test items appearing with different Item Numbers). This is a difficult task but the Find Items query can help. By doing Find Item queries on specific Block and/or Topics, related items should be brought up together making it easier to find duplicates. When duplicates are found, the redundant items can be deleted using the Delete Item mechanisms described in Chapter 5. **Care must be taken however since deleting an item will ALSO delete all of its usage records.** It would be

prudent to first print out the redundant item prior to deleting it. You can then add the corresponding usages to the version of the item that is being retained.

Compacting databases

Access does its own management of disk space for distinct databases. That is, everything in a database (Testbank) is kept in a single *.mdb file. When updates and new items are added to a database, the disk space may become fragmented (that is, there will be holes of unused space within the file). This fragmentation may become significant with disk space being wasted. Therefore, it is prudent to do a "compact" operation after each semester's updates to a Testbank. The following steps outline a safe procedure for accomplishing this compaction.

- First make a copy of the updated Testbank on your c: drive. You can do this with any file copy mechanism such as those available via Windows Explorer.

- Start Access but do not open a particular database.

- In Access, do a **TOOLS|DATABASE UTILITIES|COMPACT DATABASE** menu selection.

- Find the database file in the provided browse window, usually "v:\testbank\mathnnn.mdb" where "nnn" is the course number.

- Click on the "Compact" button. You will be prompted for the Testbank password and also for a file to put the compacted database into, use the same file name as is used by the current (uncompacted) database. That is, you'll be over-writing the current file with the compacted version of the file.

- The compaction will then take a few minutes to complete. If there are errors during the compact operation, the database can be restored using the c: drive copy that you made earlier.

- If the compaction is successful, you should copy the compacted database to your c: drive for backup purposes.

Chapter

8
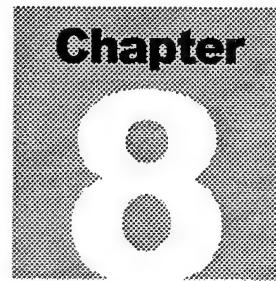
Checklists

How can I easily remember the things to do?

This chapter is redundant to much of the material already described in the previous chapters, but it also provides some administrative quidelines for managing Testbank data. The intent is to provide simple to follow checklists for key operations. References back to the earlier chapters of the Testbank 3.1 User's Manual are provided as appropriate in case additional information is needed. Checklists are provided for the following tasks:

- Checklist 1: Finding Test Items

- Checklist 2: Preparing Testbank Submissions

- Checklist 3: Updating Testbank with Test Results

- Checklist 4: Handling Baselined Final Exams

- Checklist 5: Updating Testbank with Final Exam Results

- Checklist 6: Adding New Test Items to Testbank

- Checklist 7: Loading Word Test Items

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Checklist 1: Finding Test Items

USAGE: Used by test developers, Testbank maintainers, and the Testbank Administrator to find test items based on any number of criteria.

REFERENCE: More information on finding test items can be found in Chapter 4 of this User's Manual.

1) Open the Testbank for the appropriate course by either (a) using Windows Explorer to find the corresponding database file (v:\testbank\mathnnn.mdb where "nnn" is the course number) and double-clicking on it or (b) starting Access 97 (or later) and opening the appropriate database file.   Enter the appropriate password when prompted (you can get this from the Testbank Administator).

2) Click on the **Find Items** button from the Testbank Main Menu.

3) Specify the appropriate search criteria on the Find Items query form and click on the **Find Items** button.
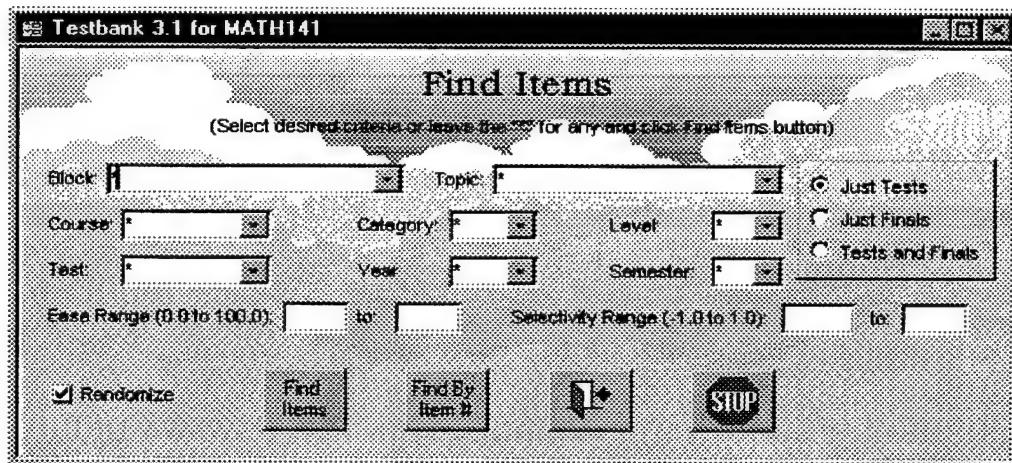
a) Most fields on the form have pull-down lists of the values in use for the field. You may also use wildcard criteria that combines specific letters with "*" to mean any set of characters and "?" to mean any single character.

b) The **Randomize** check box causes the responding items to be randomly ordered by Item Number. This is the default. Unchecking this box causes the responding items to be ordered by ascending Item Numbers.

c) The default setting is to return items used only in **Just Tests** (not in final exams). This can be overridden by checking the appropriate radio button for **Just Finals** or **Tests and Finals**.

d) Test items may be looked up specifically by Item Number using the **Find By Item #** button on the Find Items query form.

4) Review the responding test items by using the left and right arrows provided on the Display Item form.

Testbank 3.1 for MATH141

Item #: **21**   Block: application   Topic: derivative interp

Avg Ease: 65.43   Avg Selectivity: 0.44   Level: CH   Category: MC

TB21

If the function given by y = f(x) is differentiable at x, then which of the following statements a

derivative $\dfrac{dy}{dx} = f'(x)$.

   I. The derivative denotes the slope of the tangent line to the graph of f at x.

   II. The derivative denotes the average rate of change in y with respect to x.

   III. The derivative denotes the formula of the tangent line to the graph of f at x.

Ref Data   ◄   ►   Copy Item to Clipboard

Record: ◄◄ ◄ [20] ► ►► ►* of 354

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a) The **Ref Data** button shows the usage results for the currently displayed item.

b) The **Copy Item to Clipboard** button copies the Word document containing the test item to the Windows clipboard from which it can be pasted into a test document.

c) The **Print Item** button causes the current test item with its usage results to be printed.

5) Close the Display Items form using the ⬛ button.

6) Perform other queries as desired or close the Find Items query form using the ⬛ button to return to the Testbank Main Menu or with the ⬛STOP button to close the Testbank and Access.

Checklist 2: Preparing Testbank Submissions

USAGE: Those assigned to maintain the Testbank for a particular course and the Testbank Administrator use this checklist to insure all the necessary usage results data are collected for updating existing test items and adding new ones from a particular test.

1) Obtain a copy of the test that includes solutions and cuts.

2) Write the number of students that took the test on the top of the test's cover page.

3) For each multiple choice or true/false question in the test:

   a) If the question is **not** an existing Testbank item write "NEW" to the left of the question. *The Testbank Item Number will be written in under the "NEW" after the item is entered into Testbank*

   b) If the question is from Testbank, write "TB nnn" where "nnn" is the Testbank Item Number for this item.

   c) To the right of the item, write in the Ease and Selectivity results for the item as "E=<ease>" and "S=<selectivity>" where Ease is converted to a percent between 0 and 100 and selectivity is between -1 and 1. These two statistics can be obtains from the reports generated by computer scoring of the digiteks.

   d) For each choice (option) for the item, write in the number of times each option was selected. This information is also provided in the report generated by the computer scoring. It gives the number for each option in three parts (per high, middle, and low groups) and you must add these numbers for the total selected for that option.

4) For each short answer and work-out question,

   a) If the question is not an existing Testbank item write "NEW" to the left of the question. *The Testbank Item Number will be written in under the "NEW" after the item is entered into Testbank.*

   b) If the question is from Testbank, write "TB nnn" where "nnn" is the Testbank Item Number for this item.

   c) If Ease and Selectivity data was computed for these items, record them to the right of the item as "E=<ease>" and "S=<selectivity>" where Ease is converted to a percent between 0 and 100 and selectivity is between -1 and 1. *To compute Ease and Selectivity for these questions, you can have the students record their*

scores on the same type of digiteks that are used for study time data collection. They should first record their overall test score and then their scores on each of the short answer and work-out questions. Each score should be in a distinct box on the digitek and be right justified. Consistent use of digitek cells is essential; therefore, an overhead slide showing where to code the scores is very handy. The digiteks are then read onto a diskette file by the computer operators on the 2ⁿᵈ floor of Fairchild Hall. This data file is then analyzed by a special program in the file: v:\testbank\tbwo.exe. This program is straight forward to run, but does need to be told what cells the scores were coded in. The cells are numbered starting at 1 and moving left to right and then down the page. The program will allow the computed Ease and Selectivity results to be printed to either the screen, a file, or the printer (by specifying the file as "prn:").

5) The submission is now ready to be entered into Testbank. This can be done using Checklist 3 for existing GR (test) items, Checklist 5 for existing final exam items, or Checklist 6 for new test/final exam items.

6) After the test items have been entered into Testbank, the actual submission should be added to the course's notebook of Testbank exams. Here they are available for future reference. This is especially helpful if a test developer wants to look up how the cuts were written for a short answer or work-out item.

Checklist 3: Updating Testbank with Test Results

USAGE: Used by Testbank maintainers and the Testbank Administrator to update the usage reference information for test items used in a particular test (GR).

REFERENCE: More information on maintaining and updating test items can be found in Chapter 5 of this User's Manual.

1. Open the Testbank for the appropriate course by either (a) using Windows Explorer to find the corresponding database file (v:\testbank\mathnnn.mdb where "nnn" is the course number) and double-clicking on it or (b) starting Access 97 (or later) and opening the appropriate database file. Enter the appropriate password when prompted. You can get this information from the Testbank Administator.

2. Click on the **Maintain Items** button from the Testbank Main Menu.

3. Click on the **Maintain/Update Items** button on the Maintain Items menu.

4. Click on the Item Number field and then the **Find Item** button . You can then enter the Item Number of the test item you wish to update the usage data for. You can also use the record navigation buttons on the bottom of the form for this purpose.

5. In the middle of the Add/Modify Test Items form is a Usage subform. Click on the **Add New Usage** button to add a new usage for this test item.

6. Enter the Test, Sem, Year, Ease, Sel, Num, Ans, Optn, and Pop data for this usage. When doing multiple usage updates, the Test, Sem, Year, and Pop fields will automatically default to the values last entered, but these values can be overwritten as needed.

7. Commit the new usage data by either clicking on the **Save Usage** button or by moving to another test item.

8. Repeat Steps 4-7 for each test item to be updated.

9. When all the test items have been updated, close the Add/Modify Test Item form and exit Testbank and Access via the button.

Checklist 4: Handling Baselined Final Exams

USAGE: Used by test developers, Testbank maintainers, and the Testbank Administrator to handle baselined final exams.

REFERENCE: More information on baselined final exams and using Testbank to handle them can be found in Chapter 6 of this User's Manual.

PRIOR TO MAKING A NEW FINAL EXAM

* Generate a summary report of the previous final exam for the course using the **Final Exams** button from the Testbank Main Menu and then the **Print Final Exam Summary** button on the Baselined Final Exam Questions menu.

* The final exam summary report provides a cross reference of each Testbank item used in the previous final exam to its Testbank Item Number. It is important to keep track of which items in the new final exam came from Testbank and what their Item Numbers are. The Item Numbers of these baselined test items are needed for updating the Testbank with the results of their usage in the new final exam. **NOTE: An easy way to keep track of the Testbank Item Numbers for items in a final exam is to use Word 97's INSERT|COMMENT command and put the Testbank Item Number in the Comment as "TB nnn" where "nnn" is the Item Number. The Comment shows when you work with the final exam in Word but does not come out on the printed version. It also moves with the test item as it is moved about in the final exam.**

AFTER ADMINISTERING AND GRADING THE NEW FINAL EXAM

* Update the baselined final exam questions with the results of their usage in the new final exam using Checklist 5. *This is why we wanted to save the Testbank Item Numbers for these test items.*

* Compare the results from using baselined final exam items in the new final exam to previous semester usages. This can be done via the **Compare Final Exam Results** button on the Baselined Final Exam Questions menu. You might want to compare against several previous semesters including the semester just prior to the current and the previous offering from the same semester (fall or spring). This comparison data can be utilized to justify gradelines and to analyze trends in student performance.

* Add any new test items from this final exam to the Testbank using Checklist 6.

Checklist 5: Updating Testbank with Final Exam Results

USAGE: Used by Testbank maintainers and the Testbank Administrator to quickly update the Testbank with the results of using existing test items on a final exam which must be done before these results can be compared to the results of previous final exams.

REFERENCE: More information dealing with baselined final exam questions can be found in Chapter 6 of this User's Manual.

1. Open the Testbank for the appropriate course by either (a) using Windows Explorer to find the corresponding database file (v:\testbank\mathnnn.mdb where "nnn" is the course number) and double-clicking on it or (b) starting Access 97 (or later) and opening the appropriate database file. Enter the appropriate password when prompted. You can get this information from the Testbank Administrator.

2. Click on the **Final Exams** button from the Testbank Main Menu.

3. Click on the **Update Final Exam Results** button from the Baselined Final Exam Questions menu.

4. Specify the Semester, Year, and Population for the final exam on the Update Final Exam Results form and click on the **Update Results** button

5. Enter the Testbank Item Number, Number of the item in the exam, Ease, Selectivity, Answer (for multiple choice and true/false), number responding to each option (for multiple choice and true/false), and possibly a comment on the usage such as your assessment of how well the question did.

6. To commit the new data, either click the **Add New Usage** button , if there is another item to enter results for, or close the form via the button.

7. If there are errors in the results you can move your cursor to the appropriate field and enter the correct values or you can delete the entire usage record via the button.

8. When all finished, simply use the Close Form button to exit.

Checklist 6: Adding New Test Items to Testbank

USAGE: Used by Testbank maintainers and the Testbank Administrator to add new test items to the Testbank database.

REFERENCE: More information on adding new test items to Testbank can be found in Chapter 5 of this User's Manual.

1. Open the Testbank for the appropriate course by either (a) using Windows Explorer to find the corresponding database file (v:\testbank\mathnnn.mdb where "nnn" is the course number) and double-clicking on it or (b) starting Access 97 (or later) and opening the appropriate database file. Enter the appropriate password when prompted. You can get this password from the Testbank Administator.

2. Click on the **Maintain Items** button from the Testbank Main Menu.

3. Click on the **Add New Item** button from the Maintain Test Items menu.

4. Skip over the Item Number field since it will be assigned automatically by the system.

5. Specify Course, Level, Category, Block, Topic, and any Comment that you feel is appropriate in the corresponding fields. **NOTE: All of these fields, except the Comment, have pull-down lists of alternative values for each field. Although you are permitted to put most anything you wish, it is best to choose values from the pull-down lists. This keeps the available values very consistent which is necessary when using these field values to look up test items. All fields are automatically converted to upper case except for Block and Topic that are made lower case and Comment which is not converted at all.**

6. Fill in the information for the usage in the usage subform.

7. *(This Step can be skipped and the actual test item Word documents put into the Testbank later using Checklist 7).* Insert the actual test item by typing it into Word and then selecting it and copying it to the Windows 95 clipboard. Or, you may also just select it out of the test document in which it was used and copy it to the clipboard. **NOTE: It is a good idea to include the Testbank Item Number of the new test item in the upper right hand corner of the test item (as "TB nnn" where "nnn" is the Item Number) so that users can verify that the correct test item document is stored in the right test item record.**

8. Transition back to Access and click the **Paste Item** button to paste the new test item into the database.

9. Commit the update to the test item by either clicking the **Save Item** button, moving to a new test item, or closing the Add/Modify Test Item form.

10. Close the form and exit both Testbank and Access via the button.

Checklist 7: Loading Word Test Items

USAGE: Used by Testbank maintainers and the Testbank Administrator to add actual Word documents for new test items to the Testbank database.

REFERENCE: More information on adding new test items to Testbank can be found in Chapter 5 of this User's Manual.

1) Open the Testbank for the appropriate course by either (a) using Windows Explorer to find the corresponding database file (v:\testbank\mathnnn.mdb where "nnn" is the course number) and double-clicking on it or (b) starting Access 97 (or later) and opening the appropriate database file. Enter the appropriate password when prompted. You can get this password from the Testbank Administator.

2) Click on the **Maintain Items** button from the Testbank Main Menu.

3) Click on the **Load Word Documents** button.

4) Reduce the Access window and start up Word so that both Access and Word are visible on the screen.

5) Open the Word document containing the test from within Word.

6) For each item to be loaded into Testbank:

   a) Remove the point value and numbering prefix information on the test item and type in: "TB nnn" where "nnn" is the Item Number.

   b) Starting at the "TB nnn", select the test item and copy it to the clipboard via a CTRL/C or the button.

   c) Insure the correct test item record is displayed and that you're in the proper course's Testbank via the Course field.

   d) Click on the **Paste Item** button and wait to see that the item has been copied into the Test Item field.

   e) Move to the next test item using the **Goto Item #** or **Next Item** buttons, as appropriate. Either of these actions will insure the previously updated test item is saved in the database.

7) When done with a particular test, close it without saving any changes (i.e. don't save the "TB nnn" annotations in the actual test). Open a new test document, if appropriate and repeat Step 6.

8) When finished, simply exit the form using the or buttons.